

A Future Perspective
On Technological Obsolescence
At Langley Research Center

by

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The present research effort was the first phase of a study to forecast whether technological obsolescence will be a problem for the engineers, scientists, and technicians at NASA Langley Research Center (LaRC). There were four goals of the research: (1) To review the literature on technological obsolescence; (2) To determine through interviews of Division Chiefs and Branch Heads Langley's perspective on future technological obsolescence; (3) To begin making contacts with outside industries to find out how they view the possibility of technological obsolescence; and (4) To make preliminary recommendations for dealing with the problem.

Selected Results of the Study

A complete description of the findings of this research can be reviewed in a technical report in preparation. The following are a small subset of the key findings of the study:

1. NASA's centers and divisions vary in their missions and, because of this, in their capability to control obsolescence.
2. Research-oriented organizations within NASA are believed by respondents to keep up to date more than the project-oriented organizations.
3. Asked what are the signs of a professional's technological obsolescence, respondents had a variety of responses. Here are some of the most common responses: (a) The obsolescent professional uses out-dated methods and tools to carry out research. (b) The obsolescent professional is one whose opinion is no longer sought by his or her peers. (c) The obsolescent professional is one who continues to carry out essentially the same research for long periods of time without change or development.
4. Top performing scientists were viewed as "continuous learners," keeping up to date by a variety of means. The most commonly mentioned were the following: (a) Taking advanced degrees; (b) Writing and presenting research

papers; (c) Interacting with their peers both inside and outside of NASA.

5. When asked what incentives were available to aerospace technologists for keeping up to date, respondents specified a number of ideas. The majority emphasized personal pride, self-motivation, and achievement of research career goals.
6. Respondents identified many obstacles to professionals' keeping up to date in the future. Among them were the following: (a) Demands on professionals' time due to paper work and non-research-related activities; (b) Lack of interdisciplinary collaboration and cooperation; (c) The possibility that NASA's mission will change from carrying out state-of-the-art research on the frontiers of technology to carrying out research with near-term, applied payoff; (d) The sheer rate of change in the various fields, particularly the computer software and hardware fields.
7. Most respondents expressed some concern for the future of the professionals at NASA vis a vis the issue of professional obsolescence. Those who showed the least concern were involved in the "basic research" areas. They indicated that in order for the research work within their division or branch to be funded and accepted in publication form by technical journals, it will have to be innovative and will, therefore, "force" professionals to keep up to date.

Recommendations

Several preliminary recommendations can be made at this time. These are subject to change as more data are collected

1. In an effort to emphasize the importance of "continuous learning," NASA should continue to formally incorporate professional development into its human resource development efforts.
2. NASA cannot depend on an influx of new technical professionals in the future to "absorb the shock" of developing technology. Projections indicate that this influx will not take place. Therefore, management needs to continue maintain and step up its vigilance concerning the possibility of technological obsolescence.
3. Research on the topic of professional obsolescence and strategic planning for professional technical development within aerospace-related industries should be carried out. This research would provide NASA as well as industry in general with valuable information for strategic planning and development.